CLAIMS

We claim:

1. An isolated nucleic acid encoding a mammalian CXCR3 protein or functional variant thereof, wherein said protein or variant can selectively bind one or more chemokines and can mediate cellular signalling and/or a cellular response in reponse thereto.

2. The isolated nucleic acid of Claim 1, wherein said nucleic acid can hybridize under moderate stringency conditions to a second nucleic, said second nucleic acid having the sequence of Figure 1 (SEQ ID NO:1), its complement, or a portion of the sequence of Figure 1 (SEQ ID NO:1) or its complement comprising the coding sequence.

3. The isolated nucleic acid of Claim 1, wherein the isolated nucleic acid is essentially pure.

4. The isolated nucleic acid of Claim 1, wherein the protein or variant can selectively bind a chemokine selected from the group consisting of human IP-10, human Mig, a mammalian homolog of human IP-10, a mammalian homolog of human Mig.

5. The isolated nucleic acid of Claim 1, wherein the mammalian CXCR3 protein or functional variant thereof is a human CXCR3 protein or functional variant thereof.

6. The isolated nucleic acid of Claim 1 comprising SEQ ID NO:1, its complement, or a portion of SEQ ID NO:1 or its complement comprising the coding sequence.

7. The isolated nucleic acid of Claim 1, wherein the a human CXCR3 protein has an amino acid sequence as set forth in SEQ ID NO:2.

8. An isolated nucleic acid construct comprising a nucleic acid of Claim 1.

9. The isolated nucleic acid construct of Claim 8, wherein the nucleic acid is operably linked to an expression control sequence.

10. The isolated nucleic acid construct of Claim 8, the nucleic acid comprising SEQ ID NO:1, its complement, or a portion of SEQ ID NO:1 or its complement comprising the coding sequence.

11. The isolated nucleic acid construct of Claim 8, wherein said nucleic acid encodes a polypeptide having an amino acid sequence as set forth in Figure 2 (SEQ ID NO:2).

12. The isolated nucleic acid construct of Claim 8, wherein the nucleic acid encodes a fusion protein comprising a mammalian CXCR3 protein, and optionally wherein the coding sequence is operably linked to an expression control sequence.

13. A host cell comprising a recombinant nucleic acid encoding a mammalian CXCR3 protein or functional variant thereof, wherein said protein can selectively bind one or more chemokines and can mediate cellular signalling and/or a cellular response in reponse thereto.

14. The host cell of Claim 13, wherein the nucleic acid is operably linked to an expression control sequence.

15. The host cell of Claim 13, wherein the nucleic acid encodes a human CXCR3 protein encoded by SEQ ID NO:1.

16. An isolated mammalian CXCR3 protein or functional variant thereof, wherein said protein can selectively bind one or more chemokines and can mediate cellular signalling and/or a cellular response in reponse thereto.

17. The isolated mammalian CXCR3 protein or functional variant thereof of Claim 16, wherein the mammal is a human and the protein can selectively bind one or more chemokines selected from the group consisting of human IP-10 and human Mig.

18. The isolated mammalian CXCR3 protein or functional variant thereof of Claim 16, which is encoded by a nucleic acid which can hybridize under moderate stringency conditions to a second nucleic acid, said second nucleic acid having the sequence of Figure 1 (SEQ ID NO:1), its complement, or a portion of the sequence of Figure 1 (SEQ ID NO:1) or its complement comprising the coding sequence.

19. An isolated human CXCR3 protein encoded by the nucleic acid illustrated in Figure 1 (SEQ ID NO:1).

20. The isolated human CXCR3 protein of Claim 19 having an amino acid sequence as set forth in SEQ ID NO:2.

21. A fusion protein comprising a mammalian CXCR3 protein.

22. A method for producing a mammalian CXCR3 protein or variant thereof comprising:

(a) introducing into a host cell a nucleic acid encoding a mammalian CXCR3 protein or variant thereof, whereby a recombinant host cell is produced having said coding sequence operably linked to an expression control sequence; and

(b) maintaining the host cells produced in step (a) under conditions whereby the nucleic acid is expressed.

23. The method of Claim 22, further comprising the step of isolating the mammalian CXCR3 protein or variant thereof.

24. A method for producing a mammalian CXCR3 protein or variant thereof comprising maintaining a host cell containing a recombinant nucleic acid encoding a mammalian CXCR3 protein or variant thereof under conditions suitable for expression of the nucleic acid.

25. The method of Claim 24 further comprising the step of isolating the mammalian CXCR3 protein or variant thereof.

26. The method of Claim 24, wherein the mammal is a human and the protein or variant thereof can selectively bind one or more chemokines selected from the group consisting of human IP-10 and human Mig.

27. An antibody or functional antibody fragment which binds a mammalian CXCR3 protein.

28. The antibody or functional antibody fragment of Claim 27, wherein said antibody or antibody fragment can inhibit one or more functions of a mammalian CXCR3 protein.

29. The antibody or functional antibody fragment of Claim 28, wherein said antibody or antibody fragment can bind a human CXCR3 protein and can inhibit the interaction of a human CXCR3 protein with one or more ligands selected from the group consisting of IP-10 and/or Mig.

30. A method of detecting or identifying an agent which binds a mammalian CXCR3 protein or ligand binding variant thereof, comprising combining an agent to be tested with a composition comprising an isolated and/or recombinant mammalian CXCR3 protein or ligand binding variant thereof under conditions suitable for binding of ligand thereto, and detecting or measuring the formation of a complex between said agent and said mammalian CXCR3 protein or variant.

31. The method of Claim 30, wherein the agent is a ligand selected from the group consisting of human IP-10, human Mig, a mammalian homolog of IP-10, and a mammalian homolog of Mig.

32. The method of Claim 31, wherein the ligand is labeled with a label selected from the group consisting of a radioisotope, spin label, antigen label, enzyme label flourescent group or chemiluminesent group.

33. The method of Claim 31, wherein the assay is a competition assay, in which binding is determined in the presence of one or more ligands selected from the

group consisting of human IP-10, human Mig, a mammalian homolog of IP-10, and a mammalian homolog of Mig.

34. A method of detecting or identifying an agent which binds a mammalian CXCR3 protein or a ligand binding variant thereof comprising:

a) combining an agent to be tested with a host cell expressing recombinant mammalian CXCR3 protein or a ligand binding variant thereof under conditions suitable for binding of ligand thereto; and

b) detecting or measuring the formation of a complex between said agent and the mammalian CXCR3 protein or a ligand binding variant.

35. The method of Claim 34, wherein the agent is a ligand selected from the group consisting of human IP-10, human Mig, a mammalian homolog of IP-10, and a mammalian homolog of Mig.

36. The method of Claim 34, wherein the assay is a competition assay, in which binding is determined in the presence of one or more ligands selected from the group consisting of human IP-10, human Mig, a mammalian homolog of IP-10, and a mammalian homolog of Mig.

37. The method of Claim 34, wherein the mammalian CXCR3 protein or a ligand binding variant thereof can mediate cellular signalling and/or a cellular response, and the formation of a complex is monitored by detecting or measuring a signalling activity or cellular response of said CXCR3 protein or variant in response thereto.

38. A method of detecting or identifying an inhibitor of ligand binding to a mammalian CXCR3 protein or a ligand binding variant thereof comprising:

a) combining an agent to be tested with a ligand of said mammalian CXCR3 protein and a composition comprising isolated and/or recombinant mammalian CXCR3 protein or ligand binding variant thereof under conditions suitable for binding of ligand thereto; and

b) detecting or measuring binding the formation of a complex between said mammalian CXCR3 protein or variant and said ligand, whereby inhibition of complex formation by the agent is indicative that the agent is an inhibitor.

39. The method of Claim 38, wherein the ligand selected from the group consisting of human IP-10, human Mig, a mammalian homolog of IP-10, and a mammalian homolog of Mig.

40. The method of Claim 38, wherein the composition comprising isolated and/or recombinant mammalian CXCR3 protein contains a host cell expressing recombinant mammalian CXCR3 protein.

41. The method of Claim 40, wherein the mammalian CXCR3 protein can mediate cellular signalling and/or a cellular response, and the formation of a complex is monitored by detecting or measuring a signalling activity or cellular response of said CXCR3 protein or variant in response thereto.

42. A method of detecting or identifying an inhibitor of ligand binding to a mammalian CXCR3 protein or ligand binding variant thereof comprising:

a) combining an agent to be tested with a ligand of said mammalian CXCR3 protein and a host cell expressing a recombinant mammalian CXCR3 protein or ligand binding variant thereof under conditions suitable for binding of ligand thereto; and

b) detecting or measuring binding the formation of a complex between said protein or variant and said ligand, whereby inhibition of complex formation by the agent is indicative that the agent is an inhibitor.

43. The method of Claim 42, wherein the ligand selected from the group consisting of IP-10, Mig, a mammalian homolog of IP-10, and a mammalian homolog of Mig.

44. The method of Claim 42, wherein the mammalian CXCR3 protein can mediate cellular signalling and/or a cellular response, and the formation of a complex is monitored by detecting or measuring a signalling activity or cellular response of said CXCR3 protein in response thereto.

45. The method of Claim 42 wherein the agent is an antibody or antibody fragment.

46. A method of detecting or identifying an inhibitor of a mammalian CXCR3 protein or functional variant thereof comprising combining an agent to be tested with (a) a host cell expressing a recombinant mammalian CXCR3 protein or functional variant thereof, and

(b) a ligand or promoter thereof, under conditions suitable for detecting a ligand- or promoter-induced response, and assessing the ability of the test agent to inhibit said response, whereby inhibition of a ligand- or promoter-induced response by the agent is indicative that the agent is an inhibitor.

47. The method of Claim 46, wherein the response is monitored by detecting or measuring a signalling activity or cellular response of said mammalian CXCR3 protein or variant thereof in response thereto.

48. A method of detecting or identifying a promoter of a mammalian CXCR3 protein of functional variant thereof comprising combining an agent to be tested with a host cell expressing a recombinant mammalian CXCR3 protein or functional variant thereof under conditions suitable for detecting a receptor-mediated response, and detecting or measuring said response, whereby induction or stimulation of said response by the agent is indicative that the agent is a promoter.

49. An inhibitor of at least one function characteristic of a mammalian CXCR3 protein identified according to the method of Claim 38.

50. An inhibitor of Claim 49, wherein the inhibitor is an antibody or portion thereof capable of binding receptor.

51. An inhibitor of at least one function characteristic of a mammalian CXCR3 protein identified according to the method of Claim 46.

52. A promoter of at least one function characteristic of a mammalian CXCR3 protein identified according to the method of Claim 48.

53. A method of detecting a selected mammalian CXCR3 protein in a sample comprising:
    a) contacting a sample with an antibody which binds said protein under conditions suitable for specific binding of said antibody to the selected mammalian CXCR3 protein; and
    b) detecting antibody-CXCR3 complexes.

54. A method of modulating at least one function of a mammalian CXCR3 protein, comprising the step of contacting said protein with an inhibitor or promoter of at least one function of said protein.

55. A method for treating an inflammatory disease or condition, comprising administering to a mammal a therapeutically effective amount of an inhibitor of a mammalian CXCR3 protein, whereby inflammation is reduced.

56. The method of Claim 55, wherein the inflammatory disease or condition is a T cell mediated disease or condition.

57. A method of antitumor therapy, comprising administering to a mammal a therapeutically effective amount of a promoter of a mammalian CXCR3 protein, other than a natural ligand of said protein.

58. A method of antiviral therapy, comprising administering to a mammal a therapeutically effective amount of a promoter of a mammalian CXCR3 protein, other than a natural ligand of said protein.

59. Antisense nucleic acid comprising a nucleic acid having a sequence that hybridizes to a nucleic acid having the sequence:

a) SEQ ID NO:1,

b) a portion thereof comprising the coding sequence,

c) or an RNA counterpart of any one of (a) and (b).

Add 75